

REMARKS

Claims 11 and 18 are canceled and claims 1, 2, 7-10, 14-17, 21-23, 28-29 and 35-36 have been amended by this Amendment to more clearly describe the invention. Applicants reserve the right to pursue the original claims and other claims in this application and other applications. Claims 1-38 are pending in this application.

Claims 1-3, 5-7 and 23 stand rejected under 35 USC § 103(a) as being unpatentable over Tanioka et al (US 6,078,682) in view of Yoshinaga et al (US 5,763,891) and Crandall (US 4,857,955).

Claims 9, 12-15, 16, 19-22, 24, 26-28 and 38 stand rejected under 35 USC § 103(a) as being unpatentable over Tanioka et al in view of Yoshinaga et al and well known prior art (Official Notice).

Claims 10-11, 17-18 and 25 stand rejected under 35 USC § 103(a) as being unpatentable over Tanioka et al in view of Yoshinaga et al, as applied respectively to claims 9 and 16, and further in view of Crandall.

Claims 4, 8, 15, 22, 29 and 30-37 stand rejected under 35 USC § 103(a) as being unpatentable over Tanioka et al in view of Yoshinaga et al, with or without Crandall, as applied respectively to claims 3, 7, 14, 21, 28, 31 and 35, and further in view of well known prior art (Official Notice).

Reconsideration is respectfully requested.

Claims 1-38 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of co-pending Application Serial No. 10/692,569. As this is a provisional double patenting rejection, no further comment or action is required by Applicant.

The present invention is directed to document creation and management systems and, more particularly, to a system and method for embedding and extracting key information. As described in the Background of the Invention section of the application, most document management and archival systems rely on either optical character recognition (OCR) and indexing of the entire document or labor intensive

entry of keywords at the time of scanning. A disadvantage of OCR is that all information is given equal weight. Entry of keywords at the time of document storage improves the search function, but is time consuming and labor intensive. The present invention provides a system and method for embedding key information at the time of document creation to enhance search capability, while not adversely affecting the appearance or format of the document. The present invention further provides a system and method for embedding key information for extracting such key information from a scan of the document whereby the key information is retrieved and indexed.

In view of the above, independent claim 1 as amended is directed to a method for **embedding key information into a printed document** comprising the steps of creating a first section comprising a first ink having a first color under white light; and creating a second section comprising a second different ink, wherein the second ink comprises a fluorescent ink and has a **second color under white light which is substantially the same as the first color**, wherein the fluorescent ink has a fluorescence when subjected to fluorescent-exciting radiation, and wherein the first section and the second section are visually indiscernible from each other on the printed document in white light. **The second section comprises key information, which is selected during creation of the document, and the first section comprises non-selected information.**

In view of the above, independent claim 9 as amended is directed to a method for **extracting key information** comprising the steps of subjecting a printed document to a first image scanner, responsive to visible light for acquiring a first image of a first section for providing a first signal indicative of the first image, the first section comprising a first ink having a first color under white light; and subjecting the printed document to a second image scanner, responsive to fluorescent emission for acquiring a second image of a second section for providing a second signal indicative of the second image, the second ink comprising a fluorescent ink and has a **second color under white light which is substantially the same as the first color**, wherein the fluorescent ink has a fluorescence when subjected to fluorescent-exciting radiation, and wherein the first section and the second section are visually indiscernible from each

other on the printed document in white light; **wherein the printed document is scanned into an electronic archival system, and key information of the second section is detected, extracted and indexed** so that the scanned document can be retrieved based on the key information.

In view of the above, independent claim 16 as amended is directed to a system for **extracting key information** comprising a first image scanner, responsive to visible light for acquiring a first image of a first section of a printed document, for providing a first signal indicative of the first image, the first section comprising a first ink having a first color under white light; and a second image scanner, responsive to fluorescent emission for acquiring a second image of a second section of the printed word processing document, for providing a second signal indicative of the second image, the second section comprising a second different ink, wherein the second ink comprises a fluorescent ink and **has a second color under white light which is substantially the same as the first color**, wherein the fluorescent ink has a fluorescence when subjected to fluorescent-exciting radiation, and wherein the first section and the second section are visually indiscernible from each other on the printed document in white light; **wherein the printed document is scanned into an electronic archival system, and key information of the second section is detected, extracted and indexed** so that the scanned document can be retrieved based on the key information.

In view of the above, independent claim 23 as amended is directed to a **printed word processing document** comprising a first section comprising a first ink having a first color under white light; and a second section comprising a second different ink, wherein the second ink comprises a fluorescent ink and **has a second color under white light which is substantially the same as the first color**, wherein the fluorescent ink has a fluorescence when subjected to fluorescent-exciting radiation, and wherein the first section and the second section are visually indiscernible from each other on the printed word processing document in white light, **the second section comprising key information, which is selected during creation of the document by word processing, and the first section comprises non-selected information.**

Tanioka et al, in contrast, is directed to an image processing apparatus and an image processing method both applicable to a digital copying machine, an image-reading scanner, a facsimile machine, or the like. As described in the Related Background Art section, prior to Tanioka et al, an image processing apparatus or the like was known which identifies securities by detecting visible patterns or visible characteristics of images, and thus contributes to prevention of forgery. Such patterns drawn in securities for prevention of forgery of securities are "so visible that it is hard to design an identification pattern usable in common among numerous securities." Tanioka et al describes an image processing apparatus for making the identification of such patterns at a low cost. Figures 3A to 3D show examples of such patterns. At col. 2, lines 56 to col. 3, line 42, Tanioka et al describes producing such patterns using a first ink of one color to produce "pattern a" and a second ink that is a **transparent ink** that absorbs infrared light to produce "pattern b". At col. 3, lines 30-42, Tanioka et al provides (emphasis added):

In this embodiment, a determination pattern or a specific pattern is detected in a combination of the **pixel of interest X** and **surrounding four pixels A, B, C, and D**. Even when the pattern is modified, if the positions of the pixels are modified in association with the modified pattern, **the pixel applied using the ink b should be read as a pixel of interest (target pixel) and the pixels applied using the ink a should be read as surrounding pixels**. If a circuitry permitting this reading is available, an algorithm presented below can be employed as a pattern determination algorithm.

Therefore, in contrast to the present invention, the first embodiment of Tanioka et al (col. 2, line 24 to col. 4, line 36) is directed to the detection of patterns at a pixel level and not at an information level, i.e., word level, of a document.

At col. 5, lines 38-60, Tanioka et al provides (emphasis added):

Accordingly, this embodiment distinguishes the portion of an original, in which carbon black or the like is adhered or printed, on the basis of the fact that **when carbon black or the like is adhered or printed**, the voltage values of red, green, and blue components of a signal acquired from the portion of the original deteriorate without exception. **Inks a and b appear almost the same in color under visible light**. When the inks a and b are decomposed into three colors of red, green, and blue, as shown in Table 1, the red component of the ink b shows a higher reflectance than that of the ink a. For comparison, when carbon black is adhered or printed in a back face, the red component of the ink b shows a lower

reflectance than that of the ink a. When these kinds of ink materials; that is, those having the characteristics of the inks a and b are employed, **determination can be achieved by comparing the visible components of the ink b applied to a pixel of interest with those of the ink a applied to areas surrounding the pixel of interest in terms of reflectance.** Thus, the determination is conditioned on neither what is a difference in reflectance between the inks nor what is a ratio of the reflectance of one ink to that of the other ink, but whether the reflectance of one ink is higher or smaller than that of the other ink

Again, in contrast to the present invention, the fourth embodiment of Tanioka et al (col. 5, line 29 to col. 7, line 19) is directed to the detection of patterns at a pixel level and not at an information level, i.e., word level, of a document.

In the "Another Embodiment" described at col. 7, beginning at line 19, Tanioka et al includes several passages that confirm that Tanioka et al is directed to only the detection of patterns at a pixel level and not at an information level, i.e., word level, of a document. See, for example, col. 7, lines 23-25; col. 7, lines 31-48; col. 7, lines 50-63; and col. 7, line 66 to col. 8, line 4. The other embodiments of Tanioka et al do not describe or suggest that Tanioka et al is directed to other than the detection of patterns at a pixel level.

With regard to independent claims 1 and 23, the Office Action contends that Tanioka et al discloses a method for embedding key information into a printed document comprising the steps of creating a first section comprising a first ink having a first color under white light; and creating a second section (the specific pattern) comprising a second different ink, wherein the second ink has a second color under white light which is substantially the same as the first color and has a different characteristic when subjected to invisible light and wherein the first section and the second section are visually indiscernible from each other on the printed document in white light. Applicants respectfully disagree.

Although Tanioka et al, at col. 2, lines 63-67, describes that the square pattern b applied the transparent ink appears, as shown in FIG. 2, "in substantially the same in color as a surrounding area under visible light", the pattern b is not created by a second ink that has a second color under white light which is substantially the same as the first color. Here, Tanioka et al describes the second ink as an ink with transparent

characteristics such that pattern b is indiscernible to human eyes from the pattern printed by the first ink. Furthermore, as detailed above, Tanioka et al is disclosing an apparatus and method for applying and detecting security patterns in documents, not embedding and extracting key information in the document. The problem being solved in Tanioka et al is being able to detect security patterns printed on documents that are not observable in white light or capable of being copied. Tanioka et al is embedding security patterns in documents, not key information that can be extracted as in the instant invention.

As recognized in the Office Action, there is no disclosure, teaching or suggestion in Tanioka et al that the second section, i.e. "pattern b", comprises key information, which is selected during creation of the document and the first section comprises non-selected information. To overcome this deficiency, the Office Action relies on the reference to Crandall. However, Crandall does not disclose or suggest that the second color under white light is substantially the same as the first color. In contrast, Crandall is directed to printing (highlighting) certain information on a document in a second color that is different from the color used to print the other information on the document. Applicants submit that Tanioka et al and Crandall cannot be combined because Tanioka et al is directed to hidden security patterns at a pixel level and Crandall is directed to information (words) on a document. Furthermore, even assuming that Tanioka et al does not have the aforementioned deficiency of being directed to security patterns at a pixel level, Tanioka et al and Crandall cannot be combined to teach or suggest the present invention because such combination would defeat the respective problems being solved by each of Tanioka et al and Crandall. Crandall discloses an apparatus for highlighting information on a document by printing in different colors. In contrast, Tanioka et al discloses an apparatus and method for hiding security patterns in a document to prevent forgeries. For the above reasons, Tanioka et al and Crandall are not combinable.

Referring to the second ink comprising a fluorescent ink, the Office Action contends that it would have been obvious to one of ordinary skill in the art to have modified Tanioka et al in view of Yoshinaga et al to have used a second different ink

that comprises a fluorescent ink in order to take advantage of a readily available and commonly used fluorescent inks for non-visualized information recording which can cheaply and reliably be discriminated by readily available and commonly used light sources. Applicants respectfully disagree.

The requirements of the second ink in the claims are not limited to fluorescence. The independent claims recite a second ink that comprises a fluorescent ink and has a second color under white light which is substantially the same as the first color, wherein the fluorescent ink has a fluorescence when subjected to fluorescent-exciting radiation, and wherein the first section and the second section are visually indiscernible from each other on the printed document in white light. Yoshinaga et al does not disclose or suggest such an ink.

Yoshinaga et al is directed to a medium, on which non-visualized information has been recorded, and a method and apparatus for detecting and making use of the same. As provided at col. 1, lines 14-16, the term "non-visualized" is used to mean "not visible to the naked eye." As set forth in the Related Background Art section, Yoshinaga et al is directed to preventing the copying of documents that are prohibited from copying. Yoshinaga et al may be combinable with Tanioka et al for producing a "non-visualized" "pattern b" using the fluorescent ink in Yoshinaga et al. However, Tanioka et al in combination with Yoshinaga et al does not teach or suggest the present invention. In particular, Yoshinaga et al does not disclose or suggest a fluorescent ink and has a second color under white light which is substantially the same as the first color, wherein the fluorescent ink has a fluorescence when subjected to fluorescent-exciting radiation, and wherein the first section and the second section are visually indiscernible from each other on the printed document in white light. Referring to paragraph 0022 of the instant application, an example of such a second ink is a black fluorescent ink such as disclosed in U.S. patent application publication Nos. US 2002/0195586 A1 (which has issued as US Patent No. 6,793,723), and US 2003/0041774 A1 (which has issued as US Patent No. 6,827,769).

For at least the above reasons, Applicants respectfully submit that independent claims 1 and 23 are allowable over Tanioka et al in view of Yoshinaga et al and

Crandall. Claims 2-8 and 24-38, dependent upon claims 1 and 23 respectively, are allowable along with claims 1 and 23 and on their respective own merits.

With regard to independent claims 9 and 16, the Office Action contends that Tanioka et al and Yoshinaga et al, as explained with respect to contentions concerning claim 1, disclose a method and system for extracting key information comprising the steps and elements for subjecting a printed document to a first image scanning responsive to visible light for acquiring a first image of a first section for providing a first signal indicative of the first image and subjecting the printed document to a second image scanning, responsive to fluorescent emission for acquiring a second image of a second section for providing a second signal indicative of the second image. The Office Action acknowledges that Tanioka et al and Yoshinaga et al do not disclose the printed document being scanned into an electronic archival system with key information of the second section being detected, extracted and indexed so that the scanned document can be retrieved based on the key information. However, the Office Action, using Official Notice, further contends that such archival systems are well known. Applicants respectfully disagree that the only deficiency of Tanioka et al and Yoshinaga et al is that they do not disclose the printed document being scanned into an electronic archival system with key information of the second section being detected, extracted and indexed so that the scanned document can be retrieved based on the key information.

Note first that the apparatus and method in Tanioka et al are not in any way related to embedding or extracting key information in a document nor is there any disclosure, teaching or suggestion of such. Nor are the apparatus and method in Yoshinaga et al are in any way related to embedding or extracting key information in a document nor is there any disclosure, teaching or suggestion of such. Therefore, combining Tanioka et al and Yoshinaga et al in view of such known archival systems does not teach or suggest the present invention.

Claims 9 and 16, as amended, further include that the first section and the second section are visually indiscernible from each other on the printed document in white light; wherein the printed document is scanned into an electronic archival system, and key information of the second section is detected, extracted and indexed so that the

scanned document can be retrieved based on the key information. The arguments set forth above with regard to claims 1 and 23 apply here as well. Therefore, there is no disclosure, teaching or suggestion in Tanioka et al, alone or in combination with Yoshinaga et al and Crandall, of the key information in the document being printed with a second ink comprising a fluorescent ink and has a second color under white light which is substantially the same as the first color, wherein the fluorescent ink has a fluorescence when subjected to fluorescent-exciting radiation, and wherein the first section and the second section are visually indiscernible from each other on the printed document in white light.

For at least the above reasons, Applicants respectfully submit that independent claims 9 and 16 are allowable over Tanioka et al in view of Yoshinaga et al and well known prior art. Claims 10, 12-15 and 17, 18-22, dependent upon claims 9 and 16 respectively, are allowable along with claims 9 and 16 and on their respective own merits.

In view of the foregoing amendments and remarks, it is respectfully submitted that the claims of this case are in a condition for allowance and favorable action thereon is requested.

Respectfully submitted,

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